## Exercise - I (Conceptual Questions) Build Up Your Understanding

### BLOOD

**1.** The normal Albumin/Globulin ratio in blood is :-
(1) 2 : 1 (2) 1 : 2 (3) 1 : 4 (4) 1 : 5

**2.** Eosinophilia is caused by :-
(1) Taeniasis (2) Ascariaris
(3) Allergy (4) All of above

**3.** Blood group Antigen are :-
(1) Found in Hb molecule
(2) Found in Plasma protein
(3) Found on RBC
(4) None

**4.** Adult Hb has chain :-
(1) 2 $\alpha$ , 2 $\beta$ (2) 2 $\alpha$ , 2 $\gamma$
(3) 2 $\alpha$ , 2 $\delta$ (4) 4 $\alpha$

**5.** Hb F (Foetal Hb) has chain :-
(1) 2 $\alpha$ , 2 $\beta$ (2) 2 $\alpha$ , 2 $\gamma$
(3) 2 $\alpha$ , 2 $\delta$ (4) 4 $\beta$

**6.** Life span of platelets is :-
(1) 4 days (2) 9 - 12 days
(3) 20 - 30 days (4) 90 days

**7.** In normal healthy female, the number of RBC/mm 3 of blood is :
(1) 6.5-7.0 million (2) 5.5-6.0 million
(3) 4.5-5.0 million (4) 3.5-4.0 million

**8.** Blood colloidal osmotic pressure mainly maintained by which plasma protein :-
(1) Globulin (2) Albumin
(3) Fibrinogen (4) Prothrombin

**9.** Mammalian RBC are :-
(1) Biconcave, circular, non nucleated
(2) Biconcave, Nucleated
(3) Oval, Nucleated
(4) None

**10.** Globulin protein of blood plasma mainly involved in the :-
(1) Clotting
(2) Osmotic balance
(3) Defence mechanism
(4) None

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**11.** Which WBCs resist infections and are also associated with allergic reactions?
(1) Lymphocytes (2) Neutrophils
(3) Eosinophils (4) Monocytes

**12.** Persons with ____ and _____ blood group are called universal recipients & universal donors respectively :-
(1) $AB^-$, $O^+$ (2) $O^+$, $AB^-$
(3) $O^-$, $AB^+$ (4) $AB^+$, $O^-$

**13.** ABO blood grouping is based on :-
(1) Surface antibodies on RBC.
(2) Surface antigen on WBC.
(3) Surface antigen on RBC.
(4) Plasma antigens.

**14.** Which leucocyte has bean shaped nucleus?
(1) Basophil (2) Monocyte
(3) Neutrophil (4) Lymphocyte

**15.** Smallest blood element :-
(1) RBC (2) WBC
(3) Platelets (4) None

**16.** Blood clotting requires :-
(1) $Na^+ + K^+$
(2) $Na^+$ + Prothrombin
(3) $Na^+$ + Thromboplastin
(4) $Ca^{++}$ + Thromboplastin

**17.** Lymph differ from blood in possessing :-
(1) Only WBC
(2) More RBC & WBC
(3) More RBC & few WBC
(4) More WBC & few RBC

**18.** Blood platelets found in :-
(1) Pisces (2) Reptiles
(3) Birds (4) Mammals

**19.** Diapedesis means :-
(1) Formation of WBC
(2) Formation of RBC
(3) Process by which certain WBCs squeeze through thin capillary wall
(4) Movement of food in gut

**20.** Which of following act as middleman?
(1) WBC (2) Lymph
(3) Plasma (4) Blood

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**21.** Process by which blood cells are formed in bone marrow :-
(1) Haemopoiesis (2) Haemolysis
(3) Thrombopoiesis (4) Erythroblastosis

**22.** Largest leucocytes :-
(1) Neutrophil (2) Basophil
(3) Monocyte (4) Lymphocyte

**23.** Content of haemoglobin / 100 ml of Blood:-
(1) 15 gm (2) 20 gm (3) 10 gm (4) 5 gm

**24.** Micropolice man of blood :-
(1) Neutrophil (2) Basophil
(3) Eosinophil (4) Lymphocyte

**25.** Which of following has least consistency is shape?
(1) RBC (2) WBC
(3) Mast cell (4) Bone cells

**26.** Ratio WBC / RBC in human blood :-
(1) 1 : 100 (2) 1 : 200
(3) 500 : 1 (4) 1 : 500

**27.** In comparison to WBC, RBC have :-
(1) Antigen (Agglutinogen) surface on RBC
(2) Carbonic anhydrase
(3) Donnan's membrane
(4) All of above

**28.** One is more in lymph than blood :-
(1) RBC (2) Nutrients
(3) Lipids (4) Oxygen

**29.** Serum is :-
(1) Blood – Blood cells
(2) Plasma – Fibrinogen
(3) Blood – Plasma
(4) Blood – RBC

**30.** Blood bank of body is :-
(1) Liver (2) Spleen
(3) Heart (4) Bone marrow

**31.** Worn out RBC are destroyed by :-
(1) Kupffer's cells (2) Bone cells
(3) Mast cells (4) None

**32.** Spleen & thymus are haemopoeitic for (in adult) :-
(1) RBC (2) WBC
(3) Platelets (4) All of above

**33.** I$^{st}$ site of haemopoesis :-
(1) Bone marrow (2) Spleen
(3) Liver (4) Yolk sac

**34.** Which WBC has maximum lobes of nucleus?
(1) Neutrophil (2) Acidophil
(3) Basophil (4) Lymphocyte

**35.** Blood cells are produced by Bone marrow in
(1) All bones (2) Some bones
(3) Most of the bones (4) None

**36.** Which WBC has maximum life span?
(1) Basophil (2) Monocyte
(3) Acidophil (4) Neutrophil

**37.** Blood :–
(1) Contains plasma
(2) Contains corpuscles
(3) Contains proteins
(4) All of the above

**38.** A reduction in platelets number causes
(1) Clotting disorder
(2) Immune disorder
(3) Digestive disorder
(4) Respiratory disorder

**39.** Nucleus of granular WBC is mainly :–
(1) Spindle shape (2) Round
(3) Oval shape (4) Lobed

**40.** Which WBC increase in Allergy?
(1) Acidophil (2) Basophil
(3) Lymphocyte (4) Neutrophil

**41.** How many polypeptide chains are present in single molecule of Haemoglobin protein:–
(1) 1 (2) 3 (3) 4 (4) 2

**42.** Thromboplastin is secreted by :–
(1) Kidney (2) Platelets
(3) Leucocyte (4) Erythrocyte

**43.** Universal recipient blood group :-
(1) $AB^{-ve}$ (2) $O^{-ve}$ (3) $O^{+ve}$ (4) $AB^{+ve}$

**44.** Antibody are absent in which blood group:–
(1) A (2) B (3) AB (4) O

**45.** In total WBCs, lymphocytes are :-
(1) 60 – 65 % (2) 2 – 3 %
(3) 6 – 8 % (4) 20 – 25 %

**46.** Which clotting factor acts as antiheparin?
(1) Serotonin (2) Fibrin
(3) Fibrinogen (4) Thromboplastin

**47.** Blood group 'A' can receive blood from which group–
(1) A, AB, O (2) A, O
(3) O (4) B, AB

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**48.** Which is not a plasma protein :–
(1) Heparin (2) Albumin
(3) Prothrombin (4) Fibrinogen

**49.** Megakaryocyte cell is?
(1) RBC producer
(2) Thrombocyte producer
(3) WBC producer
(4) Protein producer

**50.** Person having 'B' blood group have antibody:-
(1) Anti A (2) Anti B
(3) Both (4) None

**51.** Colouring agent of plasma is :–
(1) Billiverdin (2) Stercobillinogen
(3) Urobillinogen (4) Urochrome

**52.** Basophil does not secrete :–
(1) Prothrombin (2) Heparin
(3) Histamine (4) Serotonin

**53.** In which pair erythroblastosis foetalis can occur :-
(1) $Rh^+$ male & $Rh^-$ female
(2) $Rh^-$ male & $Rh^-$ female
(3) $Rh^+$ male & $Rh^+$ female
(4) $Rh^-$ male & $Rh^+$ female

**54.** Blood of AB blood group can be donated to:-
(1) A (2) B (3) AB (4) O

**55.** The Rh antibodies from the mother (Rh – ve) can leak into the blood of the foetus (Rh + ve) and destroy the:-
(1) Foetal RBCs (2) Mother RBCs
(3) Foetal WBCs (4) Both (1) and (2)

**56.** Agranulocytes are
(1) Eosinophils and neutrophils
(2) Monocytes and lymphocytes
(3) Eosinophils and lymphocytes
(4) Lymphocytes and basophils.

**57.** Platelets are a source of
(1) Fibrinogen
(2) Calcium
(3) Thromboplastin
(4) Heamoglobin

**58.** Which is unrelated to blood coagulation ?
(1) Fibrinogen (2) Fibrin
(3) Bilirubin (4) Calcium

**59.** Major component of blood plasma is
(1) Water
(2) Inorganic Substances
(3) Organic substances
(4) Blood cells

**60.** Maximum number of white blood corpuscles is that of
(1) Basophils (2) Neutrophils
(3) Monocytes (4) Eosinophils.

**61.** Which of the following is not a granulocyte?
(1) Lymphocyte (2) Basophil
(3) Neutrophil (4) Eosinophil.

**62.** Which of the following are involved in body defence
(1) Neutrophils (2) Lymphocytes
(3) Macrophages (4) All the above.

**63.** Largest corpuscles in human blood are
(1) Erythrocytes (2) Monocytes
(3) Lymphocytes (4) Basophils

**64.** Prothrombin, albumin and fibrinogen are synthesised by
(1) Pancreas (2) Bone marrow
(3) Spleen (4) Liver

**65.** Which one is a factor for maturation of erythrocytes?
(1) Vitamin $B_{12}$ (2) Vitamin A
(3) Vitamin D (4) Vitamin C.

**66.** In which state iron is present in haemoglobin
(1) Unionic (2) $Fe^{2+}$
(3) $Fe^{3+}$ (4) None of the above

**67.** Immature RBCs of mammals have
(1) No nucleus
(2) Single beaded nucleus
(3) Many nuclei
(4) Single nucleus.

**68.** Megakaryocytes
(1) Produce leucocytes
(2) Forms blood platelets
(3) Are carriers of oxygen.
(4) Are carriers of carbon dioxide

**69.** During blood clotting, fibrin is produced by
(1) Thrombin (2) Prothrombin
(3) Liver (4) Proteolysis

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**70.** Number of erythrocytes per $mm^3$ of human blood is
(1) 4 million (2) 5 million
(3) 6 million (4) 0.5 million

**71.** Number of WBCs per $mm^3$ of human blood is
(1) 8000 (2) 4000
(3) 3000 (4) 16000

**72.** RBCs are nucleated in
(1) Man (2) Rabbit
(3) Rat (4) Frog

**73.** An anticoagulant is
(1) Heparin (2) Hirudin
(3) EDTA (4) All the above

**74.** The rarest leucocyte of human blood is
(1) Basophil (2) Monocyte
(3) Neutrophil (4) Eosinophil.

**75.** Blood has a pH of
(1) 7.4 (2) 7.8
(3) 6.9 (4) 6.3

**76.** The RBCs in human are
(1) Oval
(2) Circular, biconcave and nucleated
(3) Circular, biconcave and nonnucleated
(4) Oval, nonnucleated, Circular

**77.** Bilirubin and biliverdin are derived from
(1) Globin (2) Haem
(3) Iron (4) Fat.

**78.** Protein required for coagulation of blood is
(1) Haemoglobin (2) Globulin
(3) Fibrinogen (4) Albumin

**79.** Globulin is
(1) Plasma protein
(2) Antigen
(3) Serum
(4) Found in lymphatic tissue.

**80.** To prevent clotting, donor's blood is treated with-
(1) Sodium glycocholate
(2) Sodium hydroxide
(3) Heparin
(4) Sodium taurocholate.

**81.** Continuous bleeding from an injured part of body is due to deficiency of :-
(1) Vitamin–A (2) Vitamin–B
(3) Vitamin–K (4) Vitamin–E

**82.** Abnormal increase in number of RBC in blood is called
(1) Anaemia (2) Polycythemia
(3) Leukemia (4) Sarcoma

**83.** Liquid which remain after clotting of blood is called as :-
(1) Serum (2) Plasma
(3) Lymph (4) Blood

**84.** Which of the following substances, if introduced into the blood stream, would cause coagulation of blood at the site of its introduction?
(1) Thromboplastin (2) Fibrinogen
(3) Heparin (4) Prothrombin

## TYPES OF CIRCULATION

**85.** Closed circulatory system occurs in
(1) Cockroach (2) Tadpole/Fish
(3) Mosquito (4) Housefly

**86.** Systemic heart refers to :-
(1) The heart that contracts under stimulation from nervous system
(2) Left auricle and left ventricle in higher vertebrates
(3) Entire heart in lower vertebrates
(4) The two ventricles together in humans

## STRUCTURE OF HEART, HEART BEAT, CONDUCTING SYSTEM

**87.** Where is the pace maker situated :-
(1) In left auricle near opening of pulmonary vein
(2) In right auricle near eustachian valve
(3) On inter - auricular septum
(4) On inter-ventricular septum

**88.** Papillary muscles are found in :-
(1) Haemocoel of cockroach
(2) Auricles of heart
(3) Ventricles of heart
(4) Arm

**89.** To reach the left side of heart the blood must pass through :-
(1) Sinus venosus (2) Kidneys
(3) Liver (4) Lungs

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**90.** Characteristics of cardiac muscles are that they :-
(1) Contract quickly and get fatigued
(2) Contract quickly and do not get fatigue
(3) Contract slowly and get fatigued
(4) Contract slowly and do not get fatigue

**91.** In heart of Human bicuspid valve is situated between :-
(1) Right auricle and pulmonary aorta
(2) Post caval and auricle
(3) Left auricle and left ventricle
(4) Right auricle and right ventricle

**92.** When the right ventricle contracts the blood is pump into :-
(1) Superior vena cava (2) Dorsal aorta
(3) Pulmonary aorta (4) Pulmonary veins

**93.** The blood leaving the lungs is richer than the blood entering the lung in :-
(1) Oxygen (2) $CO_2$
(3) Hydrogen (4) Moisture

**94.** Pace maker influences :-
(1) Contraction of heart muscles
(2) Flow of blood in heart
(3) Rate of heart beat
(4) Generation of action potential

**95.** Purkinje fibres are found in :-
(1) Brain (2) liver
(3) eyes (4) Heart

**96.** Coronary artery supplies blood to :-
(1) Mammary glands (2) Rib muscles
(3) Skin (4) Heart muscle

**97.** In children, heart rate is :-
(1) More than adult (2) Less than adult
(3) Equal to adult (4) None of these

**98.** The wall of Human heart is thick due to presence of :-
(1) Inner layer endocardium
(2) Middle layer myocardium
(3) Outer most layer pericardium
(4) Outer layer epicardium

**99.** The pulmonary aorta arise from :-
(1) Left ventricle (2) Right ventricle
(3) Left auricle (4) Right auricle

**100.** When right ventricle of human heart contract then blood pumped into :-
(1) All parts of body (2) Lungs
(3) Pulmonary veins (4) Systemic aorta

**101.** Bundle of His originates from :-
(1) Sinu-auricular node
(2) Auriculo-ventricular node
(3) Pulmonary aorta
(4) Systemic aorta

**102.** The small oval depression found on inter auricular septum in adult Human is termed:-
(1) Foramen ovale
(2) Fossa ovalis
(3) Foramen of monero
(4) Foramen magnum

**103.** Purkinje fibres help in contraction of :-
(1) Right auricle (2) Left ventricle
(3) Ventricles (4) Aorta

**104.** The papillary muscles are helpful in :-
(1) Movement of eye balls
(2) Movement of eye lids
(3) Closing & opening the valves of heart
(4) Movement of pinnae

**105.** Heart of human does not have :-
(1) Right auricle (2) Sinus venosus
(3) Conus arterious (4) Both 2 & 3

**106.** The valves of the heart are attached to papillary muscles by :-
(1) Columnae carnae
(2) Chordae tendinae
(3) Tendinae
(4) Pectinate muscles

**107.** Which has the thickest walls :-
(1) Right auricle (2) Left auricle
(3) Right ventricles (4) Left ventricle

**108.** Blood supply to heart musculature is via :-
(1) Cardiac artery (2) Coronary artery
(3) Aorta (4) Pulmonary vein

**109.** The remnant of foramen ovale (Fossa Ovalis) is located in :-
(1) Inter atrial septum
(2) Interventricular septum
(3) Between pulmonary & aortic arches
(4) Superior vena cava

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**110.** Which organ is by passed in Foetal Circulation :-
(1) Heart (2) Brain
(3) Lung (4) Liver

**111.** The connection between pulmonary & Aortic arches in Foetus is :-
(1) Ligamentum arteriosum
(2) Ductus arteriosus
(3) Foramen ovale
(4) All of the above

**112.** The mitral valve is supported by :-
(1) Bundle of HIS (2) Ductus Arteriosus
(3) Foramen ovale (4) Chorda tendinae

**113.** Normal Heart rate in a two months old infant is-
(1) <72/min. (2) 60 to 72/min.
(3) >72/min. (4) 16/min.

**114.** The largest and the thickest heart chamber is
(1) Left ventricle (2) Left atrium
(3) Righ atrium (4) Right ventricle

**115.** Pace maker is
(1) Instrument for measuring heart beat
(2) Instrument for measuring pulse rate
(3) Auriculo-ventricular node that provides impulse for heart beat
(4) Sino-auricular node that provides impulse for heart beat

**116.** Tricupsid valve is found in between
(1) Sinus venosus and right auricle
(2) Right auricle and right ventricle
(3) Left ventricle and left auricle
(4) Ventricle and aorta

**117.** Origin of heart beat and its conduction is represented by
(1) AV node → Bundle of His → SA node → Purkinje fibres
(2) SA node → Purkinje fibres → AV node → Bundle of His
(3) Purkinje fibres → AV node → AV node → Bundle of His
(4) SA node → AV node → Bundle of His → Purkinje fibres

**118.** The hormone that stimulates heart beat is
(1) Insulin (2) Adrenaline
(3) Glucagon (4) Gastrin

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**119.** Heart beat is accelerated by
(1) Sympathetic nerves and noradrenaline
(2) Cranial nerves and adrenaline
(3) Cranial nerves and acetylcholine
(4) Sympathetic nerves and acetylcholine

**120.** Neurogenic heart is characteristic of
(1) Humans (2) Invertebrates
(3) Rat (4) Rabbit

**121.** In circulatory system, valves occur in
(1) Heart and blood vessels of both vertebrates and invertebrates as well as vertebrate lymphatics
(2) Both vertebrate and invertebrate hearts
(3) Vertebrate heart only
(4) Both vertebrate and invertebrate hearts and their blood vessels.

**122.** Pericardial fluid is secreted by
(1) Myocardium
(2) Parietal peritoneum
(3) Visceral peritoneum
(4) Pericardium

**123.** Which one generates heart beat?
(1) Purkinje fibres
(2) Cardiac branch of vagus nerve
(3) SA node (4) AV node

**124.** Heart wall is made of
(1) Myocardium (2) Epicardium
(3) Endocardium (4) All the above

**125.** Match the columns

| | **Column I** | | **Column II** |
|---|---|---|---|
| a | Superior Vena Cava/SVC | p | Carries deoxygenated blood to lungs |
| b | Inferior Vena blood Cava/IVC | q | Carries oxygenated from lungs |
| c | Pulmonary Artery | r | Brings deoxygenated blood from lower parts of body to right atrium |
| d | Pulmonary Vein | s | Brings deoxygenated blood from upper parts of body into right atrium |

(1) a—q, b—s, c—r, d—p
(2) a—s, b—p, c—q, d—r
(3) a—s, b—r, c—p, d—q
(4) a—s, b—p, c—r, d—q

**126.** Blood vessel which brings oxygenated blood to left auricle is
(1) Precaval vein/SVC
(2) Post caval vein/IVC
(3) Pulmonary vein
(4) Pulmonary artery

**127.** Ventricular contraction is in command of :-
(1) S.A. Node (2) A.V. Node
(3) Purkinje fibers (4) Papillary muscles

**128.** Bundle of His is a network of :-
(1) Muscle fibres distributed throughout the heart walls
(2) Muscle fibres found only in the inter ventricular septum
(3) Nerve fibres distributed in ventricles
(4) Nerve fibres found throughout the heart

**129.** Endothelium and Endocardium originate from :-
(1) Ectoderm (2) Mesoderm
(3) Endoderm (4) All of the above

**130.** The cardiac impulse that results into the heart beat is delayed at :-
(1) Internodal tract (2) AV node
(3) Bundle of His (4) Purkinje fibres

**131.** Bicuspid (mitral) valve guards the opening in mammals between :-
(1) Left atrium and left ventricle
(2) Pulmonary vein and left auricle
(3) Stomach and intestine
(4) Right atrium and right ventricle

**132.** "Bundle of His" are :-
(1) nervous tissue supplied to ventricles
(2) nervous tissue supplied to heart
(3) muscular tissue supplied to ventricles
(4) muscular tissue supplied to heart

**133.** Papillary muscles are located in
(1) Ventricle, heart of human
(2) Dermis of mammalian skin
(3) Orbit of vertebrates eyes
(4) Pylorus of vertebrate stomach

**134.** The heart beat of which animal is myogenic in nature-
(1) Cockroach (2) Leech
(3) Elephant (4) All of these

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## REGULATION OF HEART BEAT, CARDIAC CYCLE AND HEART SOUNDS

**135.** Blood pressure and heart beat is influenced by:-
(1) Insulin (2) Adrenaline
(3) Optic nerve (4) Growth hormone

**136.** Heart beat is controlled by which cranial nerve :-
(1) X (2) IX (3) III (4) V

**137.** The heart sound "DUP" is produced when :-
(1) Mitral valve opens
(2) Mitral valve closes
(3) Semilunar valve at the base of aorta closes
(4) Tricuspid valve opens

**138.** When heart beat decreases than normal is called -
(1) Bradycardia (2) Tachycardia
(3) Hypocardia (4) Nicardia

**139.** The 'Lubb' and "Dup" heart sound are due to:-
(1) Opening of heart valves
(2) Action of papillary muscles
(3) Closing of heart valves
(4) Activity of pace maker

**140.** Normal Cardiac output is :-
(1) 15 Litres/min. (2) 5 Litres × 72/min.
(3) 5 Litres/min. (4) 5/72 Litres/min.

**141.** Acetylcholine causes :-
(1) Bradycardia (2) Tachycardia
(3) Both (4) None

**142.** I$^{st}$ Heart sound is :-
(1) 'LUBB' at end of systole
(2) 'DUBB' at end of systole
(3) 'LUBB' at beginning of Ventricular systole
(4) 'DUP' at beginning of Ventricular systole

**143.** Heart beat becomes faster on stimulation by
(1) Sympathetic nerves and adrenaline
(2) Sympathetic and parasympathetic nerves
(3) Parasympathetic nerves and epinephrine
(4) Parasympathetic nerves and acetylcholine

**144.** The sound of lubb is produced during closure of
(1) Bicuspid valve
(2) Tricuspid valve
(3) Semilunar valves
(4) Both (1) and (2)

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**145.** 'Dup' sound is produced during closure of
(1) Semilunar valves (2) Bicuspid value
(3) Tricuspid value (4) both (2) and (3)

**146.** In diastole, the Heart is filled with the blood. This blood is :-
(1) Deoxygenated (2) Venous blood
(3) Oxygenated blood
(4) Partial oxygenated blood

**147.** In human oxygenated blood flows from :–
(1) Left auricle to left ventricle during auricular systole
(2) Right auricle to right ventricle during ventricular systole
(3) Right ventricle to aorta during ventricular systole
(4) Pulmonary vein to left auricle during auricular systole

**148.** Tachycardia is :-
(1) Fast heart rate (2) Slow heart rate
(3) Stop heart rate (4) Normal heart rate

**149.** A heart "murmur" disorder indicates a defect of :-
(1) Bundle of His
(2) Heart valves
(3) Sinuauricular node
(4) Atrioventricular node

**150.** Blood enters into the heart because muscles of :
(1) Atria relax (2) Ventricle contract
(3) Ventricle relax (4) Atria contract

## BLOOD PRESSURE, BLOOD VESSELS, PORTAL SYSTEM AND LYMPHATIC SYSTEM AND OTHERS

**151.** Blood Capillaries are made of :-
(1) Endothelium and thin coat of connective tissue
(2) Endothelium and thin coat of muscle fibres
(3) Endothelium and thin coat of connective tissue and muscle fibres.
(4) Only endothelium

**152.** Cardiac center is present in
(1) Cerebrum
(2) Medulla oblongata
(3) Pons
(4) Epithalamus

**153.** Pulmonary veins are those which :-
(1) Carry deoxygenated blood from lungs to heart
(2) Carrying oxygenated blood From lungs to heart
(3) Carry deoxygenated blood from heart to lung
(4) Carry oxygenated blood from heart to lungs

**154.** Oxygenated blood is carried by :-
(1) Pulmonary artery (2) Pulmonary vein
(3) Renal vein (4) Hepatic portal vein

**155.** Lymph can be defined as :-
(1) Blood minus corpuscles
(2) Blood minus Plasma
(3) Blood minus WBC
(4) Blood minus RBC & Platelets

**156.** Sphygmomanometer measures :-
(1) Blood pressure (2) Pulse rate
(3) Rate of heart beat (4) All

**157.** Which has no muscular walls :-
(1) Capillary (2) Arteriole
(3) Veins (4) Artery

**158.** Pulse beat is measured in :-
(1) Veins (2) Artery (Radial)
(4) Nerve (4) Capillary

**159.** In a normal man blood pressure is :-
(1) 120/80 mm of Hg
(2) 80/100 mm of Hg
(3) 80/120 mm of Hg
(4) 100/80 mm of Hg

**160.** In which of the following character a vein differs from an artery :-
(1) Having valves to control flow of blood
(2) Having narrow lumen
(3) Having muscular wall
(4) Having pigmented wall to give dark look

**161.** Systolic pressure is higher than diastolic pressure due to :-
(1) Volume of blood in the heart is greater during systole
(2) Arteries contract during systole
(3) Blood vessels offer resistance to flowing blood during systole
(4) Blood is forced into arteries during systole.

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**162.** The hepatic portal system is :-
(1) Between digestive tract and hypothalamus
(2) Between digestive tract and liver
(3) Between liver and hypothalamus
(4) Between liver and Pituitary

**163.** Which artery supplies blood to the diaphragm :-
(1) Phrenic (2) Splenic
(3) Renal (4) Caudal

**164.** Which one of the following organ can be called a sort of "blood bank"?
(1) Heart (2) Liver
(3) Spleen (4) Lungs

**165.** A renal portal system is found in :-
(1) Rabbit (2) Mouse
(3) Horse (4) Frog

**166.** All arteries carry oxygenated blood except:-
(1) Systemic (2) Hepatic
(3) Pulmonary (4) Cardiac

**167.** When there is a sudden loss of blood from the body the organ which supplies blood is:-
(1) Spleen (2) Heart
(3) Liver (4) Lung

**168.** Coagulation of lymph is :-
(1) Faster than blood
(2) Not possible
(3) Slower than blood
(4) A passive process

**169.** An artery can be distinguished from a vein in having
(1) Thicker wall (2) Lesser lumen
(3) No valves (4) All of the above

**170.** The most important center of lymph formation is-
(1) Liver (2) Spleen
(3) Bone marrow (4) Mucosa of ileum

**171.** Removal of which organ will have least effect in an adult Human :-
(1) Spleen (2) Liver
(3) Pancreas (4) Pituitary

**172.** Which one of the following is the main graveyard of RBC :-
(1) Bone marrow (2) Spleen
(3) Liver (4) Kidney

**173.** Largest lymphoid organ of body is :-
(1) Liver (2) Kidney
(3) Spleen (4) Pancreas

**174.** A portal system is that in which :-
(1) A vein begins from an organ and ends in heart
(2) An artery breaks up in an organ & restarts by the union of its capillaries
(3) The blood from gut is brought in to kidneys before it is poured in to heart
(4) A vein breaks up in an organ into capillaries & restarts by their union as a new vein in the same organ

**175.** Indicate correct statement for Human :-
(1) Arteries always carry oxygenated blood while veins always carry deoxygenated blood
(2) Venous blood is returned to left auricle
(3) Arteries are provided with valves while veins are devoid of valves
(4) Arteries always carry blood away from the heart, while veins always carry blood towards the heart

**176.** Blood circulation that starts in capillaries and ends in capillaries is called :-
(1) Portal circulation
(2) Hepatic circulation
(3) Cardiac arrest
(4) Coronary circulation

**177.** What is true about vein
(1) All veins carry deoxygenated blood
(2) All veins carry oxygenated blood
(3) They carry blood from organs towards heart
(4) They carry blood from heart towards organs

**178.** In mammals the role of spleen is :-
(1) Graveyard of RBC
(2) Reservoir of blood
(3) Haemopoietic organ
(4) All

**179.** Which of the following is valve less?
(1) Arteries (2) Veins
(3) Lymphatics (4) Chambers in Heart

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**180.** Which of the following carries only deoxygenated blood?
(1) Carotid artery
(2) Pulmonary artery
(3) Pulmonary vein
(4) Aorta

**181.** Pericardium in made up of -
(1) Simple cuboidal epithelium
(2) Simple squamous epithelium
(3) Simple columnar epithelium
(4) Stratified squamous epithelium

**182.** Lymph
(1) Transports $O_2$ to brain
(2) Transports $CO_2$ to lungs
(3) Returns interstitial fluid to blood
(4) Returns RBCs and WBCs to lymph nodes

**183.** Glucose is carried from digestive tract to liver by-
(1) Hepatic artery
(2) Hepatic portal vein
(3) Pulmonary vein
(4) Pulmonary artery

**184.** Pulmonary artery differs from pulmonary vein in having
(1) Thick wall (2) Thin wall
(3) Valves (4) Both (2) and (3)

**185.** Blood pressure is measured by
(1) Sphygmomanometer
(2) Phonocardiogram
(3) Electrocardiogram
(4) Stethoscope

**186.** All veins have deoxygenated blood except
(1) Renal vein
(2) Hepatic vein
(3) Hepatic portal vein
(4) Pulmonary veins.

**187.** Normal pulse pressure is
(1) 80 mm Hg (2) 120 mm Hg
(3) 40 mm Hg (4) 320 mm Hg

**188.** Fully digested food reaches to liver by :-
(1) Hepatic portal vein
(2) Hepatic artery
(3) Hepatic vein
(4) All the above

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**189.** Which of the following statement is true for Lymph?
(1) WBC and serum
(2) All components of blood except RBCs, Platelets and some proteins
(3) RBCs, WBCs and Plasma
(4) RBCs, Proteins and Platelets

**190.** Lymph vessels pour their materials in
(1) Sub clavian vein
(2) Pulmonary artery
(3) Artery which enters in legs
(4) Right ventricle

**191.** Hepatic portal system starts from
(1) Digestive system to liver
(2) Kidney to liver
(3) Liver to heart
(4) Liver to kidney

**192.** Blood leaving liver and moving to heart will have more concentration of :-
(1) Bile (2) Urea
(3) Glycogen (4) Amino acid

**193.** In the veins, the blood is under low pressure and blood flow is _____ due to this pressure.
(1) Slow (2) Rapid
(3) Frequently (4) Remains constant

**194.** The structure of which of the following consist of a layer of single cell thickness ?
(1) Blood capillary (2) Artery
(3) Aorta (4) arteriole

**195.** Coronary artery disease is due to :
(1) Streptococci bacteria
(2) Inflammation of pericardium
(3) Weakening of the heart valves
(4) Insufficient blood supply to the heart muscles

**196.** An artery is a vessel that carries blood :
(1) Away from the heart
(2) Towards the heart
(3) Which is deoxygenated without any exception
(4) none of these

**197.** Which one indicates the hypertension ?
(1) 90/60 (2) 120/85
(3) 110/70 (4) 140/100

## EXERCISE-I (Conceptual Questions) ANSWER KEY

| Question | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Answer | 1 | 4 | 3 | 1 | 2 | 1 | 3 | 2 | 1 | 3 | 3 | 4 | 3 | 2 | 3 |
| Question | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| Answer | 4 | 1 | 4 | 3 | 2 | 1 | 3 | 1 | 1 | 2 | 4 | 4 | 3 | 2 | 2 |
| Question | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 |
| Answer | 1 | 2 | 4 | 1 | 2 | 2 | 4 | 1 | 4 | 1 | 3 | 2 | 4 | 3 | 4 |
| Question | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| Answer | 4 | 2 | 1 | 2 | 1 | 3 | 1 | 1 | 3 | 1 | 2 | 3 | 3 | 1 | 2 |
| Question | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 |
| Answer | 1 | 4 | 2 | 4 | 1 | 2 | 4 | 2 | 1 | 2 | 1 | 4 | 4 | 1 | 1 |
| Question | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| Answer | 3 | 2 | 3 | 1 | 3 | 3 | 2 | 1 | 1 | 2 | 2 | 2 | 3 | 4 | 2 |
| Question | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | 101 | 102 | 103 | 104 | 105 |
| Answer | 3 | 3 | 1 | 1 | 4 | 4 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 4 |
| Question | 106 | 107 | 108 | 109 | 110 | 111 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 |
| Answer | 2 | 4 | 2 | 1 | 3 | 2 | 4 | 3 | 1 | 4 | 2 | 4 | 2 | 1 | 2 |
| Question | 121 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 |
| Answer | 1 | 4 | 3 | 4 | 3 | 3 | 1 | 2 | 2 | 2 | 1 | 3 | 1 | 3 | 2 |
| Question | 136 | 137 | 138 | 139 | 140 | 141 | 142 | 143 | 144 | 145 | 146 | 147 | 148 | 149 | 150 |
| Answer | 1 | 3 | 1 | 3 | 3 | 1 | 3 | 1 | 4 | 1 | 2 | 1 | 1 | 2 | 1 |
| Question | 151 | 152 | 153 | 154 | 155 | 156 | 157 | 158 | 159 | 160 | 161 | 162 | 163 | 164 | 165 |
| Answer | 4 | 2 | 2 | 2 | 4 | 1 | 1 | 2 | 1 | 1 | 4 | 2 | 1 | 3 | 4 |
| Question | 166 | 167 | 168 | 169 | 170 | 171 | 172 | 173 | 174 | 175 | 176 | 177 | 178 | 179 | 180 |
| Answer | 3 | 1 | 3 | 4 | 4 | 1 | 2 | 3 | 4 | 4 | 1 | 3 | 4 | 1 | 2 |
| Question | 181 | 182 | 183 | 184 | 185 | 186 | 187 | 188 | 189 | 190 | 191 | 192 | 193 | 194 | 195 |
| Answer | 2 | 3 | 2 | 1 | 1 | 4 | 3 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 4 |
| Question | 196 | 197 | | | | | | | | | | | | | |
| Answer | 1 | 4 | | | | | | | | | | | | | |

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## Exercise - II (Previous Year Questions) AIPMT/NEET

### AIPMT 2006

**1.** Examination of blood of a person suspected of having anemia, shows large, immature, nucleated erythrocytes without haemoglobin. Supplementing his diet with which of the following is likely to alleviate his symptoms?
(1) Thiamine
(2) Folic acid and cobalamine
(3) Riboflavin
(4) Iron compounds

### AIPMT 2007

**2.** Which one of the following mammalian cells is not capable of metabolising glucose to carbon-dioxide aerobically ?
(1) Red blood cells
(2) White blood cells
(3) Unstriated muscle cells
(4) Liver cells

**3.** A drop of each of the following, is placed separately on four slides. Which of them will not coagulate?
(1) Whole blood from pulmonary vein
(2) Blood plasma
(3) Blood serum
(4) Sample from the thoracic duct of lymphatic system

### AIPMT 2008

**4.** Which type of white blood cells are concerned with the release of histamine and the natural anticoagulant heparin ?
(1) Eosinophils (2) Monocytes
(3) Neutrophils (4) Basophils

**5.** In humans, blood passes from the post caval to the diastolic right atrium of heart due to :-
(1) stimulation of the sino auricular node
(2) pressure difference between the post caval and atrium
(3) pushing open of the venous valves
(4) suction pull

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**6.** The most active phagocytic white blood cells are:-
(1) Eosinophils and lymphocytes
(2) Neutrophils and monocytes
(3) Neutrophils and eosinophils
(4) Lymphocytes and macrophages

### AIPMT 2009

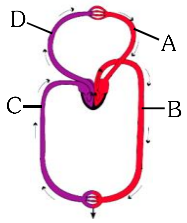
**7.** The most popularly known blood grouping is the ABO grouping. It is named ABO and not ABC, because "O" in it refers to having:-
(1) No antigens A and B on RBCs
(2) Other antigens besides A and B on RBCs
(3) Over dominance of this type on the genes for A and B types
(4) One antibody only - either anti–A or anti–B on the RBCs

**8.** The letter T in T-lymphocyte refers to :-
(1) Thymus (2) Thyroid
(3) Thalamus (4) Tonsil

**9.** Compared to blood our lymph has :-
(1) More RBCs and less WBCs
(2) No plasma
(3) Plasma without proteins
(4) More WBCs and no RBCs

### NEET-UG 2013

**10.** Figure shows schematic plan of blood circulation in humans with labels A to D, Identify the label and give its function/s.




(1) D-Dorsal aorta-takes blood from heart to body parts, $PO_2$ = 95 mm Hg
(2) A-Pulmonary vein-takes impure blood from body parts, $PO_2$ = 60 mm Hg
(3) B-Pulmonary artery-takes blood from heart to lungs, $PO_2$ = 90 mm Hg
(4) C-Vena Cava-takes blood from body parts to the right auricle, $PCO_2$ = 45 mm Hg

**AIPMT 2014**

**11.** How do parasympathetic neural signals affect the working of the heart ?
(1) Reduce both heart rate and cardiac output.
(2) Heart rate is increased without affecting the cardiac output.
(3) Both heart rate and cardiac output increase.
(4) Heart rate decreases but cardiac output increases.

**AIPMT 2015**

**12.** Blood pressure in the mammalian aorta is maximum during :
(1) Diastole of the right ventricle
(2) Systole of the left ventricle
(3) Diastole of the right atrium
(4) Systole of the left atrium

**NEET-I 2016**

**13.** Blood pressure in the pulmonary artery is :-
(1) same as that in the aorta.
(2) more than that in the carotid.
(3) more than that in the pulmonary vein.
(4) less than that in the venae cavae.

**NEET-II 2016**

**14.** Name the blood cells, whose reduction in number can cause clotting disorder, leading to excessive loss of blood from the body.
(1) Neutrophils (2) Thrombocytes
(3) Erythrocytes (4) Leucocytes

**15.** Serum differs from blood in :-
(1) Lacking clotting factors
(2) Lacking antibodies
(3) Lacking globulins
(4) Lacking albumins

**NEET(UG) 2017**

**16.** Adult human RBCs are enucleated. Which of the following statement(s) is/are **most appropriate** explanation for this feature ?
(a) They do not need to reproduce
(b) They are somatic cells
(c) They do not metabolize
(d) All their internal space is available for oxygen transport
(1) only (a) (2) (a), (c) and (d)
(3) (b) and (c) (4) only (d)

**17.** The hepatic portal vein drains blood to liver from :
(1) Stomach (2) Kidneys
(3) Intestine (4) Heart

**18.** Frog's heart when taken out of the body continues to beat for sometime.
Select the best option from the following statements.
(a) Frog is a poikilotherm.
(b) Frog does not have any coronary circulation.
(c) Heart is "myogenic" in nature.
(d) Heart is autoexcitable
**Options:**
(1) Only(d) (2) (a) and (b)
(3) (c)and(d) (4) Only(c)

**NEET(UG) 2018**

**19.** Match the items given in Column I with those in Column II and select the ***correct*** option given below:

| Column I | Column II |
|---|---|
| a. Tricuspid valve | i. Between left atrium and left ventricle |
| b. Bicuspid valve | ii. Between right ventricle and pulmonary artery |
| c. Semilunar valve | iii. Between right atrium and right ventricle |

| | a | b | c |
|---|---|---|---|
| (1) | iii | i | ii |
| (2) | i | iii | ii |
| (3) | i | ii | iii |
| (4) | ii | i | iii |

**20.** Match the items given in Column I with those in Column II and select the ***correct*** option given below:-

| Column I | Column II |
|---|---|
| a. Fibrinogen | i. Osmotic balance |
| b. Globulin | ii. Blood clotting |
| c. Albumin | iii. Defence mechanism |

| | a | b | c |
|---|---|---|---|
| (1) | iii | ii | i |
| (2) | i | ii | iii |
| (3) | i | iii | ii |
| (4) | ii | iii | i |

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## NEET(UG) 2019

**21.** Match the **Column - I** with **Column -II**

| Column - I | Column - II |
|---|---|
| (a) P-wave | (i) Depolarisation of ventricles |
| (b) QRS complex | (ii) Repolarisation of ventricles |
| (c) T-wave | (iii) Coronary ischemia |
| (d) Reduction in the size of T-wave | (iv) Depolarisation of atria |
| | (v) Repolarisation of atria |

Select the **correct** option -

| | **(a)** | **(b)** | **(c)** | **(d)** |
|---|---|---|---|---|
| (1) | (iv) | (i) | (ii) | (iii) |
| (2) | (iv) | (i) | (ii) | (v) |
| (3) | (ii) | (i) | (v) | (iii) |
| (4) | (ii) | (iii) | (v) | (iv) |

## NEET(UG) 2019 (ODISHA)

**22.** All the components of the nodal tissue are auto excitable. Why does the SA node act as the normal pacemakar?

(1) SA node has the lowest rate of depolarisation.

(2) SA node is the only component to generate the threshold potential.

(3) Only SA node can convey the action potential to the other components.

(4) SA node has the highest rate of depolarisation.

**23.** A specialised nodal tissue embedded in the lower corner of the right atrium, close to Atrio-ventricular septum, delays the spreading of impulses to heart apex for about 0.1 sec. The delay allows.

(1) blood to enter aorta.

(2) the ventricles to empty completely.

(3) blood to enter pulmonary arteries.

(4) the atria to empty completely.

## NEET(UG) 2020

**24.** Match the following columns and select the correct option.

| Column - I | Column - II |
|---|---|
| (a) Eosinophils | (i) Immune response |
| (b) Basophils | (ii) Phagocytosis |
| (c) Neutrophils | (iii) Release histaminase, destructive enzymes |
| (d) Lymphocytes | (iv) Release granules containing histamine |

| | **(a)** | **(b)** | **(c)** | **(d)** |
|---|---|---|---|---|
| (1) | (ii) | (i) | (iii) | (iv) |
| (2) | (iii) | (iv) | (ii) | (i) |
| (3) | (iv) | (i) | (ii) | (iii) |
| (4) | (i) | (ii) | (iv) | (iii) |

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## NEET(UG) 2020 (COVID-19)

**25.** Which of the following conditions cause erythroblastosis foetalis ?

(1) Mother $Rh^{+ve}$ and foetus $Rh^{-ve}$

(2) Mother $Rh^{-ve}$ and foetus $Rh^{+ve}$

(3) Both mother and foetus $Rh^{-ve}$

(4) Both mother and foetus $Rh^{+ve}$

## NEET(UG) 2021

**26.** Persons with 'AB' blood group are called as "Universal recipients". This is due to :

(1) Absence of antigens A and B on the surface of RBCs

(2) Absence of antigens A and B in plasma

(3) Presence of antibodies, anti-A and anti-B, on RBCs

(4) Absence of antibodies, anti-A and anti-B, in plasma

**27.** Which enzyme is responsible for the conversion of inactive fibrinogens to fibrins?

(1) Thrombin (2) Renin

(3) Epinephrine (4) Thrombokinase

## NEET(UG) 2022

**28.** Which one of the following statements is **correct** ?

(1) The tricuspid and the bicuspid valves open due to the pressure exerted by the simultaneous contraction of the atria

(2) Blood moves freely from atrium to the ventricle during joint diastole.

(3) Increased ventricular pressure causes closing of the semilunar valves.

(4) The atrio-ventricular node (AVN) generates an action potential to stimulate atrial contraction

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**29.** Given below are two statements:

**Statement I:** The coagulum is formed of network of threads called thrombins.

**Statement II:** Spleen is the graveyard of erythrocytes.

In the light of the above statements, choose the **most appropriate** answer from the options given below:

(1) Both **Statement I** and **Statement II** are incorrect

(2) **Statement I** is correct but **Statement II** is incorrect

(3) **Statement I** is incorrect but **Statement II** is correct

(4) Both **Statement I** and **Statement II** are correct

**RE-NEET(UG) 2022**

**30.** A unique vascular connection between the digestive tract and liver is called _____ .

(1) Hepato–pancreatic system

(2) Hepatic portal system

(3) Renal portal system

(4) Hepato–cystic system

**31.** Arrange the following formed elements in the decreasing order of their abundance in blood in humans :

(a) Platelets (b) Neutrophils

(c) Erythrocytes (d) Eosinophils

(e) Monocytes

Choose **the most appropriate answer** from the options given below :

(1) (c), (a), (b), (e), (d)

(2) (c), (b), (a), (e), (d)

(3) (d), (e), (b), (a), (c)

(4) (a), (c), (b), (d), (e)

## EXERCISE-II (Previous Year Questions) ANSWER KEY

| Question | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Answer | 2 | 1 | 3 | 4 | 2 | 2 | 1 | 1 | 4 | 4 | 1 | 2 | 3 | 2 | 1 |
| Question | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| Answer | 4 | 3 | 3 | 1 | 4 | 1 | 4 | 4 | 2 | 2 | 4 | 1 | 2 | 3 | 2 |
| Question | 31 | | | | | | | | | | | | | | |
| Answer | 1 | | | | | | | | | | | | | | |

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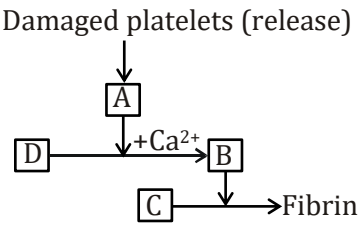
## Exercise - III Master Your Understanding

### EXERCISE-III(A) (NCERT BASED QUESTIONS)

**1.** Which of the following WBCs are phagocytic cells.
(a) Monocytes (b) Neutrophils
(c) Basophils (d) Eosinophils
(1) Only (a) (2) (a) and (b)
(3) (a) and (c) (4) (c) and (d)

**2.** Identify A, B and C in the given below blood clotting process.




**Options :-**

| | A | B | C |
|---|---|---|---|
| (1) | Thromoplastin | Prothrombin | Fibrinogen |
| (2) | Thrombin | Fibrinogen | Thrombo-Kinase |
| (3) | Thromboplastin | Thrombin | Fibrinogen |
| (4) | Prothrombin | Thrombin | Fibrinogen |

**3.** Platelets are cells fragments produced from:-
(1) Thrombocytes (2) Megakaryocytes
(3) Monocytes (4) Mast cell

**4.** Read the following statements (A-D) :-
A. RBCs are the most abundant of all the cells in blood
B. A healthy adult man has on an average 5 billions to 5.5 billions of RBCs $mm^{-3}$ of blood
C. RBCs are formed in liver in the adults
D. RBCs are devoid of nucleus in most of the mammals and are biconcave in shape
How many of the above statements are incorrect
(1) Four (2) Three (3) Two (4) One

**5.** Erythroblastosis foetalis can be avoided by administering.....to the mother immediately after the delivery of first child:-
(1) Vitamins (2) Antibiotics
(3) Anti-Rh antibodies (4) Rh-antigen

**6.** Read the following (A - D) Statements :-
(A) Plasma is a straw coloured, viscous fluid constituting 55 percent of the blood.
(B) 90-92 percent of plasma is water and proteins contribute 6-8 percent of it
(C) Globulins are needed for clotting or coagulation of Blood
(D) Fibrinogens are primarily involved in defence mechanism of the body.
How many of the above statements are correct:
(1) Four (2) Three
(3) Two (4) One

**7.** Which of the following is incorrect match of W.B.Cs with its functions :-
(1) Neutrophils – Phagocytic cells
(2) Eosinophils – Resist infections and are also associated with allergic reactions
(3) Basophils – Secrete histamine serotonin and Heparin
(4) T-Lymphocytes – Produce antibodies

**8.** The state of heart when it is not pumping blood effectively enough to meet the needs of the body, is :-
(1) Heart attack (2) Cardiac arrest
(3) Angina pectoris (4) Heart Failure

**9.** The opening between the right atrium and the right ventricle is guarded by :-
(1) Tricuspid valve (2) Bicuspid value
(3) Semilunar valve (4) Eustachian valve

**10.** Incomplete double circulation is found in :-
(1) Reptiles and Birds
(2) Amphibian and Reptiles
(3) Birds and Mammals
(4) Fish and Amphibia

**11.** The first heart sound is associated with :-
(1) Closure of the semilunar valves
(2) Closure of the tricuspid and bicuspid valves
(3) Opening of the semilunar valves
(4) Opening of the eustachian valve

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**12.** Correctly match column-I with column-II

| Column-I | Column-II |
|---|---|
| A-Cardiac arrest | (i) Heart not pumping blood effectively |
| B-Heart Failure | (ii) Heart muscle is suddenly damaged |
| C-Heart attack | (iii) Acute chest pain |
| D-Angina | (iv) Heart stops beating |

(1) A→(i), B→(ii), C→(iii), D-(iv)
(2) A→(iv), B→(ii), C→(i), D-(iii)
(3) A→(iv), B→(i), C→(ii), D-(iii)
(4) A→(ii), B→(iii), C→(i), D-(iv)

**13.** Match the Column-I with Column-II.

| Column-I | Column-II |
|---|---|
| (A) Fish | (i) 3-chambered heart |
| (B) Amphibia | (ii) Incomplete double circulation |
| (C) Birds | (iii) 4-chambered heart |
| | (iv) Single circulation |
| | (v) 2-chambered heart |
| | (vi) Double circulation |

(1) A→(i), (ii) B→(iii), (vi) C→(iv), (v)
(2) A→ (i), (iv) B→(v), (ii) C→(iii), (vi)
(3) A→(v), (iv) B→(i), (ii) C→(iii), (vi)
(4) A→(iii), (ii) B→(i), (iv) C→(v), (vi)

**14.** In which the following can increase the rate of heart beat?
(A) Sympathetic neural signals.
(B) Parasympathetic neural signals.
(C) Adrenal medullary hormones.
(D) Vagus nerve.
(E) Thyroxine hormone
(F) Acetylcholine
(1) A, C, E (2) D, E, F
(3) A, C, D (4) B, D, F

**15.** During joint diastole :-
(1) Tricuspid and bicuspid valves are open
(2) Semilunar valves are closed
(3) All the four chambers of heart are in a relaxed state.
(4) All of the above

**16.** Which is responsible for initiating and maintaining the rhythmic contractile activity of the heart?
(1) Sino-atrial node (SAN)
(2) Atrio-ventricular node (AVN)
(3) Purkinje fibres
(4) Bundle of his

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**17.** In which the following has the ability to generate action potentials without any external stimuli?
(1) Sino-atrial node (SAN)
(2) Atrio-ventricular node (AVN)
(3) Purkinje fibres
(4) All of the above

**18.** Which information is **incorrect** about cardiac output?
(1) It's average value is 5000 ml
(2) The stroke volume multiplied by the heart rate, gives the cardiac output.
(3) It is the volume of blood pumped out by each ventricle per minute.
(4) The body has no ability to alter the cardiac output.

**19.** Birds and Mammals have :-
(1) Single and closed type circulation
(2) Double and open type circulation
(3) Double and closed type circulation
(4) Single and open type circulation

**20.** Open circulatory system is present in :-
(1) Annelids and Chordates
(2) Annelids and Arthropods
(3) Arthropods and Chordates
(4) Arthropods and Mollusca

**21.** Identify the correct sequence of events in a cardiac cycle :-
(1) Joint diastole → Atrial systole → Ventricular systole
(2) Joint diastole → Atrial diastole → Ventricular systole
(3) Ventricular systole → Atrial systole → Joint diastole
(4) Atrial systole → Joint diastole → Ventricular systole

**22.** During ventricular systole :-
(1) Semilunar valves are closed
(2) About 30 percent blood is pumped into aorta from ventricles.
(3) Tricuspid and Bicuspid valves are closed
(4) Ventricular pressure declines

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**23.** The cardiac impulse is initiated and conducted further upto ventricle. The correct sequence of conduction of impulse is

| | | | | |
|---|---|---|---|---|
| (1) | S A Node | A V Node | Purkinje fiber | A V Bundle |
| (2) | S A Node | Purkinje fiber | A V Node | A V Bundle |
| (3) | S A Node | A V Node | A V Bundle | Purkinje fiber |
| (4) | S A Node | Purkinje fiber | A V Bundle | A V Node |

**24.** The second heart sound (dup) is associated with the closure of
(1) Tricuspid valve (2) Semilunar valves
(3) Bicuspid valve (4) Tricuspid and bicuspid valves.

**25.** Match the terms given under Column 'I' with their functions given under Column 'II' and select the answer from the options given below:

| Column-I | Column-II |
|---|---|
| A. Lymphatic System | i. Carries oxygenated blood |
| B. Pulmonary vein | ii. Immune Response |
| C. Thrombocytes | iii. To drain back the tissue fluid to the circulatory system |
| D. Lymphocytes | iv. Coagulation of blood |

(1) A – (i), B – (ii), C – (iii), D – (iv)
(2) A – (iii), B – (i), C – (iv), D – (ii)
(3) A – (iii), B – (i), C – (ii), D – (iv)
(4) A – (ii), B – (i), C – (iii), D – (iv)

**26.** Cardiac activity could be moderated by the autonomous neural system. Tick the correct answer :-
(1) The parasympathetic system stimulates heart rate and stroke volume
(2) The sympathetic system stimulates heart rate and stroke volume
(3) The parasympathetic system decreases the heart rate but increase stroke volume
(4) The sympathetic system decreases the heart rate but increase stroke volume

**27.** Which among the following is correct during each cardiac cycle ?
(1) The volume of blood pumped out by the Rt and Lt ventricles is same.
(2) The volume of blood pumped out by the Rt and Lt ventricles is different
(3) The volume of blood received by each atrium is different
(4) The volume of blood received by the aorta and pulmonary artery is different

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## EXERCISE-III (B) (ANALYTICAL QUESTIONS)

**28.** Blood platelets are found only in the blood of
(1) Birds (2) Reptiles
(3) Mammals (4) Amphibians

**29.** What is the main difference in human and frog RBC?
(1) Human RBC are non-nucleated
(2) Haemoglobin is found only in human RBC
(3) Human RBC have nucleus
(4) Human RBC are multinucleated

**30.** Prothrombin is found in :-
(1) Intestine and helps in cellulose digestion
(2) Liver and helps in production of bile
(3) Blood and gives red colour
(4) Blood and helps in blood clotting

**31.** Which type of WBCs are most abundant in blood of rabbit and other vertebrates?
(1) Acidophils (2) Basophils
(3) Lymphocytes (4) Neutrophils

**32.** The basophils of white blood cells liberates or secretes :-
(1) Heparin (2) Serotonin
(3) Histamine (4) All of these

**33.** Circular, biconcave and non-nucleated RBC's are found in
(1) Rat (2) Rabbit
(3) Man (4) All of the above

**34.** In the ABO blood system, you normally type blood group of following types :-
(1) A (2) B, AB
(3) ABO (4) A, B, AB or O

**35.** Read the following statements and choose the correct option -
(a) Plasma consists of nearly 45% part of blood
(b) Fibrinogen, albumin & globulin are major proteins of plasma
(c) Albumin helps in osmotic balance & retention of water in plasma
(d) Plasma without the clotting factors is called serum
(1) only b and c correct
(2) b, c & d correct
(3) a, b & c correct
(4) only c & d correct

**36.** Which of the following should be avoided in biological marriages?
(1) $A^+$ boy and $A^+$ girl (2) $A^+$ boy and $A^-$ girl
(3) $O^+$ boy and $O^+$ girl (4) $O^-$ boy and $O^+$ girl

**37.** After examining the blood group of husband and wife , the doctor advised them not to have more than one child. The blood groups of the couple are likely to be :
(1) Male $Rh^-$ and female $Rh^+$
(2) Female $Rh^-$ and male $Rh^+$
(3) Male $Rh^+$ and female $Rh^+$
(4) Male $Rh^-$ and female $Rh^-$

**38.** Mammalian RBC is :-
(1) Biconcave, circular, non-Nucleated
(2) Biconcave, Nucleated
(3) Oval Nucleated
(4) Biconvex and nucleated

**39.** Which one of the following is agranulocyte?
(1) Neutrophil (2) Eosinophil
(3) Basophil (4) Monocyte

**40.** Which among of the following is incorrect about platelets?
(1) Also known as Thrombocytes.
(2) Normal platelets count is 1.5 – 3.5 lakh/$mm^3$ of blood.
(3) They are nucleated cell fragments.
(4) Platelets are only found in mammals.

**41.** The valve that checks the back flow of blood from left ventricle to left atrium and is having two cusps :-
(1) Tricuspid valve
(2) Mitral valve
(3) Pulmonary semilunar valve
(4) Aortic semilunar valve

**42.** Which of the following receives oxygenated blood from the lungs through pulmonary veins?
(1) Left atrium
(2) Right atrium
(3) Both left and right atrium
(4) Statement is wrong because left atrium receive deoxygenated blood

**43.** Which of the following, does not help in clotting of blood?
(1) Heparin (2) Prothrombin
(3) $Ca^{2+}$ (4) Exposure to $O_2$

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**44.** The SA node is located at :-
(1) In the lower left ventricle wall
(2) In the septum between the atria and ventricles
(3) In the septum between the left and right ventricles
(4) In the upper right atrial wall

**45.** Which one of the following couple were suggested by Doctors to not have more than one child
(1) $Rh^+$ male and $Rh^-$ female
(2) $Rh^-$ male and $Rh^+$ female
(3) $Rh^+$ male and $Rh^+$ female
(4) $Rh^-$ male and $Rh^-$ female

**46.** The pH of blood is :
(1) Between 7–8 (2) Between 2–4
(3) Between 12–14 (4) Between 2–5

**47.** Universal blood recipient is :
(1) Blood group–O
(2) Blood group–AB
(3) Blood group–A
(4) Blood group–B

**48.** Life span of RBC is :
(1) 50 days (2) 70 days
(3) 120 days (4) 220 days

**49.** During blood clotting which of the following is used
(1) Co (2) $Ca^{++}$
(3) $Na^+$ (4) $Cl^-$

**50.** The fibers that conduct the impulse to the ventricles are known as the :-
(1) SA node
(2) AV bundle
(3) Right bundle branch
(4) Purkinje fibers

**51.** Which of the following does not play a role in blood coagulation ?
(1) Vitamin K (2) Vitamin D
(3) Calcium ions (4) Fibrinogen

**52.** The cardiac output of a person is 4.2 lit/minute and pulse rate is 60/minute. Calculate the stroke volume :
(1) 70 ml (2) 90 ml
(3) 3.80 ml (4) 100 ml

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**53.** Read the following statements and choose which are not correct -
(a) Plasma has 90 – 92% water & 6 – 8% proteins
(b) Erythrocytes are called as formed elements & constitute 55% of blood
(c) Granulocytes include basophil, neutrophil & monocyte
(d) Reduction in number of platelets may cause excessive blood loss
Choose the correct answer from options given below :
(1) a and b (2) b and c
(3) c and d (4) b, c and d

**54.** Cardiac output :-
(1) Stroke volume x heart rate
(2) Stroke volume x end systolic volume
(3) Heart rate x end systolic volume
(4) End diastolic volume x End systolic volume

**55.** Which of the following waves of ECG represent Repolarization?
(1) P wave (2) QRS complex
(3) RS wave (4) T wave

**56.** Choose the option which has all correct statements related to ECG -
(a) QRS complex represents polarisation of ventricles
(b) ECG is graphical representation of electrical activity of heart
(c) T-wave represent end of diastole & repolarisation
(d) Number of QRS complexes is equal to number of heart beat of an individual.
(1) a, b and d (2) b, c and d
(3) b and c (4) b and d

**57.** The hepatic portal system is :-
(1) Between digestive tract and hypothalamus
(2) Between digestive tract and liver
(3) Between liver and hypothalamus
(4) Between liver and Pituitary

**58.** The hormonal regulation of Cardiac output is:
(1) Mediated by adrenal cortex
(2) Mediated by adrenal medulla
(3) Mediated by thyroid
(4) Mediated by pineal

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**59.** Given below are two statements:
**Statement-I :** Cardiac output is blood volume pumped by each ventricle per minute.
**Statement-II :** Body has the ability to alter heart rate but not stroke volume.
In the light of the above statements, choose the most appropriate answer from the options given below:
(1) Both Statement-I and II both are incorrect.
(2) Statement-I is correct but statement-II is incorrect.
(3) Statement-I is incorrect and Statement-II is correct.
(4) Both Statement-I and Statement-II are correct.

**60.** Given below are two statements:
**Statement-I :** Sympathetic nervous system can increase the strength of ventricular contraction & cardiac output also.
**Statement-II :** Adrenal medullary hormones can decrease the cardiac output.
In the light of the above statements, choose the most appropriate answer from the options given below:
(1) Both Statement-I and II both are incorrect.
(2) Statement-I is correct but statement-II is incorrect.
(3) Statement-I is incorrect and Statement-II is correct.
(4) Both Statement-I and Statement-II are correct.

**61.** Match the columns

| Column-I | Column-II |
|---|---|
| a. Bicuspid valve | p. Brain |
| b. Nephron | q. Liver |
| c. Alveoli | r. Heart |
| d. Cerebrum | s. Kidney |
| | t. Lungs |

(1) a–s, b–r, c–p, d–t
(2) a–r, b–t, c–s, d–p
(3) a–r, b–s, c–t, d–p
(4) a–s, b–q, c–p, d–t

**62.** Vasoconstriction causes
(1) Increase in heart beat
(2) Decrease in heart beat
(3) Increase in blood pressure
(4) Decrease in blood pressure

**63.** Given below are two statements:
**Statement-I :** Lymph is derived from blood vascular system & again drain back to the blood.
**Statement-II :** Lymph is important carrier for nutrients, hormones & fatty acid etc.

In the light of the above statements, choose the most appropriate answer from the options given below:
(1) Both Statement-I and II both are incorrect.
(2) Statement-I is correct but statement-II is incorrect.
(3) Statement-I is incorrect and Statement-II is correct.
(4) Both Statement-I and Statement-II are correct.

## Exercise - III ANSWER KEY

| Question | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Answer | 2 | 3 | 2 | 3 | 3 | 3 | 4 | 4 | 1 | 2 | 2 | 3 | 3 | 1 | 4 |
| Question | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| Answer | 1 | 4 | 4 | 3 | 4 | 1 | 3 | 3 | 2 | 2 | 2 | 1 | 3 | 1 | 4 |
| Question | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 |
| Answer | 4 | 4 | 4 | 4 | 2 | 2 | 2 | 1 | 4 | 3 | 2 | 1 | 1 | 4 | 1 |
| Question | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| Answer | 1 | 2 | 3 | 2 | 2 | 2 | 1 | 2 | 1 | 2 | 4 | 2 | 2 | 2 | 2 |
| Question | 61 | 62 | 63 | | | | | | | | | | | | |
| Answer | 3 | 3 | 4 | | | | | | | | | | | | |